Do male and female patients with chronic musculoskeletal pain differ in their pre-treatment expectations of rehabilitation outcome?

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ORIGINAL REPORT

DO MALE AND FEMALE PATIENTS WITH CHRONIC MUSCULOSKELETAL PAIN DIFFER IN THEIR PRE-TREATMENT EXPECTATIONS OF REHABILITATION OUTCOME?

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Purpose: **To analyse differences between males and females in expectations about rehabilitation outcome.**

Methods: **Design: cross-sectional study. Setting: a general rehabilitation centre. Patients: *n* = 616, mean age 44 years, with chronic musculoskeletal pain, referred for multidisciplinary pain rehabilitation. All eligible patients in the period January 2005 to September 2009 were sent a questionnaire prior to or during the first two weeks of the treatment; the response was 630 out of 1105 (57%), of whom 14 patients did not give permission to use their data for research purposes. Main outcome measure: odds ratios.**

Results: **Odds ratios for 21 items from a list of 25 expectations were not significant, odds ratios for 3 expectations were lower than 2 and odds ratio for 1 expectation was 4.0. Male patients were more likely than female patients to expect that the treatment would enable them to cope better with being a spouse and that the cause of their pain would be found. Female patients were more likely than male patients to expect that the treatment would enable them to better accept the fact that they could no longer do what they were able to do in the past, and that they would have fewer problems with household activities.**

Conclusion: **There were no gender differences in pre-treatment expectations for 21 of 25 possible expectations, small differences for 3 expectations and a strong, clinically important difference for 1 expectation: female patients were more likely than male patients to expect that they would have fewer problems with household activities.**

Key words: expectation; musculoskeletal pain; rehabilitation; multidisciplinary treatment; gender.

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INTRODUCTION

Musculoskeletal disorders are highly prevalent in the general population. Chronic musculoskeletal pain (CMP) of moderate to severe intensity occurs in 19% of adults in European countries (1), with a higher prevalence in female than in male subjects (1–3). This difference in prevalence between men and women is largely unexplained. Several studies have reported gender differences with respect to various pain-related items in patients with CMP (4, 5). For example, gender differences have been reported in the effect of chronic pain on cytokine blood levels (6), ischaemic pain tolerance (7), the risk of developing chronic pain disorders (1, 3) and catastrophizing cognitions (8). Gender differences have also been reported to have a major influence on the results of treatment of patients with CMP (7, 9–10), although others have found no gender difference in treatment outcome (11).

An important issue in the treatment of patients with CMP is that of pre-treatment expectations. Patients' expectations are among the predictors of clinical outcome in chronic pain treatment (12–15). For example, Myers et al. (12) found that higher expectations for recovery were associated with greater functional improvement. Goossens et al. (14) showed that patients who, prior to the treatment, believed that the treatment would help them to cope better with their pain, reported better pain coping and control, less catastrophizing thoughts and a higher health-related quality of life. Most studies have focused on the degree to which patients believe that rehabilitation will be beneficial ("To what extent do you expect that…"). Very few studies have tried to determine what exactly a patient with chronic pain expects from rehabilitation. A review of patients' expectations about treatment for back pain was presented by Verbeek et al. (16), and concluded that patients expect an explanation for their pain, instructions and advice on back pain management, pain relief and sickness certification. In the study by McCarthy & Oldham (17), patients rated a clear diagnosis and a favourable treatment outcome as highly important. It is obvious that it is important for healthcare providers to know what their patients expect from the treatment (16). It is likely that differences in expectations between healthcare providers and patients have an adverse influence on the outcome (18).

Nowadays, goal setting is usually explicitly set by therapists together with patients and because of this collaboration, patients pre-treatment expectation are likely to influence the content of the rehabilitation treatment. As far as we know, there has been no research into gender difference in expectations

about rehabilitation treatment. Differences in pre-treatment expectations between male and female patients may explain gender differences in the content as well as outcome of rehabilitation treatment and are therefore an interesting topic for research. Before studying whether differences in pre-treatment expectations influence outcomes among male and female patients with CMP, however, it is important to know whether such differences actually exist. The research question in the present study was therefore whether male and female patients with CMP differ in their pre-treatment expectations about rehabilitation treatment.

METHODS

Patients

The study included patients with CMP admitted to the "Revalidatie Friesland" rehabilitation centre (the Netherlands). Revalidatie Friesland offers in-patient treatment at 1 department, and out-patient treatment at 5 rehabilitation departments of hospitals in towns in the north of the Netherlands. It offers multidisciplinary treatment for patients with pain-related disabilities with a wide range of complexity. The area where it is situated, in the north of the Netherlands, is partly rural and partly industrialized, with medium-sized towns. Patients were referred to the rehabilitation departments by general practitioners, neurologists or other physicians. The study population consisted of patients who were participating in a project to assess the outcome of rehabilitation in patients with CMP at the "Revalidatie Friesland" rehabilitation centre. The present study included patients who started treatment between January 2005 and September 2009. Inclusion criteria were: age over 18 years, pain due to musculoskeletal problems, which had been present for longer than 3 months, and being admitted for rehabilitation treatment. Exclusion criteria were inability to understand the questions in Dutch, co-morbidity with severe negative consequences for physical functioning and unwillingness to provide data for research purposes. All eligible patients were sent a questionnaire prior to or during the first two weeks of the treatment. A total of 630 patients returned this questionnaire (response rate 57%). Fourteen patients did not give permission to use their data for research purposes, therefore they were excluded. Thus, a total of 616 patients were included in the analysis.

Treatment

Intended treatments were based on cognitive-behavioural concepts (13, 19). The rehabilitation physician saw all patients before the treatment started, to check the (contra)indications for rehabilitation and to explain the aims and contents of the treatment in general terms. If before or at the initial stage of the programme the rehabilitation physician suspected substantial psychological involvement in the pain syndrome, the patient was referred to the team psychologist. The treatment always involved a physiatrist, a physiotherapist and an occupational therapist, and if psychosocial factors were dominant, a social worker and/or a psychologist. The treatment focused on various goals, depending on the characteristics of the complaints, activity limitations, participation problems and psychological distress. The most commonly used treatment modalities were teaching ergonomic principles, graded activity and behavioural therapy. In general, treatment focused on optimization of functioning.

Assessment

A description of the sample was made by assessing patients' characteristics with a questionnaire including questions about the duration of the current pain period, education level, employment status and marital status. The physician recorded the gender and the main pain location: back, neck or other location.

Pain and disability were assessed by means of the visual analogue scale (VAS) for pain and the Short Form 36 (SF-36). The VAS for pain consists of 3 100-mm lines, the left end labelled as "no pain" (0 mm) and the right end as "very severe pain" (100 mm). Patients were asked to draw a vertical mark on 3 of these lines; on the upper line for the current pain, on the second line for the pain at its worst (highest pain level) during the previous week, and on the lower line for the pain at its best (lowest pain level) during the previous week.

The SF-36 includes 36 questions and measures 9 dimensions: physical functioning, social functioning, physical role restriction, emotional role restriction, mental health, vitality, pain, general health and health change (20). The scores range from 0 to 100 on each dimension, and a lower score means more disability.

Expectations about rehabilitation outcome were measured with a self-constructed questionnaire. Patients were given a list of 25 possible treatment expectations (Table I) and the option of adding further expectations. The patients were asked to indicate their expectations about the treatment by ticking the items. The treatment expectations included in the questionnaire were based on the results of a consensus study about treatment goals in pain rehabilitation (21). The expectation "that the cause of the pain will be found" was added because of the results of the study by Verbeek et al. (16).

Statistical analysis

We calculated the odds of the respondent indicating that they expected a particular expectation to be fulfilled, the reference category being that the respondent had not indicated this expectation. Marital status, employment status and benefit were dichotomized: living alone vs married or living with a partner; not employed vs employed or self-employed; receiving no benefit vs receiving a benefit (for example social, sickness or unemployment benefit). Education level was trichotomized, with "low" meaning primary school to lower vocational education; "intermediate" meaning intermediate vocational education, and "high" meaning pre-university education and higher, including university students.

Differences between male and female patients in characteristics, duration and location of complaints, VAS scores and SF-36 scores were tested. Depending on whether the variable was nominal or ordinal, and normally or not normally distributed, we used the Pearson χ^2, Student's *t*-test or Mann-Whitney *U* test.

The likelihood that an expectation was indicated by a male or female respondent was tested using logistic regression. Gender was entered into the analysis, and the characteristics that differed significantly between male and female were entered as covariates. Because patient inclusion had extended over a period of 5 years, the year of inclusion was also entered into the analysis. The likelihoods were expressed as adjusted odds ratios. In accordance with Fleiss et al. (22), we considered $0.35 < \text{odds ratio (OR)} < 3.0$ to be small and $\text{OR} < 0.35$ or > 3.0 to be strong and clinically important. The 2-tailed significance level was set at $p \leq 0.05$. All data were analysed using SSPS, version 16.0.

RESULTS

Most patients were referred by the general practitioner (46%), neurologist (13%) or (orthopaedic) surgeon (15%); the others by other physicians, among others the rheumatologist (5%). Characteristics of the included patients, duration and location of pain complaints, VAS scores and SF-36 scores are presented in Table II. The male and female respondents differed in some characteristics. More male than female patients had been referred for back pain. There were no differences between the two groups in the duration of current complaints, pain intensity or functioning. Characteristics of the non-responders were limited to gender and age. Thirty-three percent (33%) of the non-responders were male. The mean age of the male non-responders was 44 years (standard deviation (SD) 11 years), while that

Table I. *Percentage of male and female patients with chronic musculoskeletal pain who indicated specific expectations, and odds ratios of being male or female patient and indicating a specific expectation (for co-variants in model, see text). Only odds ratios with* $p \leq 0.05$ *are presented*

	Male ($n=167$) %	Female ($n=449$) %	Odds ratio Gender
Being able to engage in more activities	54	52	
Having fewer problems with activities you like	43	50	
Knowing better which activities you can do and which ones to avoid	46	46	
Making better choices as regards activities to do and those to avoid	37	43	
Being better able to accept the fact that you have pain	39	38	
Being able (or better able) to accept the fact that you can no longer do what you were able to do in the past	41	46	1.6 (1.05–2.5)
Moving more easily or better	64	62	
Having a better physical condition	55	62	
Being able to a have job (or work longer hours)	40	33	
Coping better with your job	33	26	
Having fewer problems with household activities	29	58	4.0 (2.5–6.4)
Being better able to raise your child(ren)	14	16	
Coping better with being a husband/wife	30	21	0.5 (0.3–0.9)
Having fewer problems with leisure activities or volunteer work	38	44	
Coping with problems at home and/or at work	18	14	
Having a better grip on the pain	48	49	
Having better control over your life	32	33	
Having less pain	59	63	
Having no pain	34	25	
Being better able to cope with the pain	62	57	
Being better able to relax	42	54	
Being better able to sleep	41	35	
Being less gloomy and/or angry and/or anxious	31	30	
Using less painkillers	26	26	
Having the cause of the pain found	29	21	0.6 (0.4–0.9)
Other	4	7	

Table II. *Characteristics of patients with chronic musculoskeletal pain, as well as location and duration of pain complaints, Short Form 36 (SF-36) scores and visual analogue scale pain scores of male and female patients*

Characteristics	Male ($n=167$)	Female ($n=449$)	p-value[a]
Age, years, mean (SD)	46 (10)	44 (13)	<0.001[a]
Marital status: % married or living with partner	84	74	0.01[b]
Education level: %			
Low	44	22	
Intermediate	43	53	<0.001[b]
High	13	25	
Employed (% yes)	72	55	<0.001[b]
Receiving benefit (% yes)	64	42	<0.001[b]
Pain complaints, location (%)			
Back	52	30	<0.001[b]
Neck	10	11	[b]
Other	48	59	<0.001[b]
Duration of current complaints, years, median (quartiles)/mean (SD)	2 (1–5)/4.9 (6.4)	2 (1–6)/4.6 (5.9)	[c]
Pain intensity, mm, median (quartiles)/mean (SD)			
At the moment	57 (35–72)/53 (24)	57 (36–73)/54 (23)	[c]
Worst	78 (65–89)/74 (20)	78 (65–90)/75 (20)	[c]
Best	35 (18–54)/38 (25)	36 (20–57)/39 (25)	[c]
Functioning; SF-36 scores, median in % (quartiles)			
Physical functioning	45 (30–65)	45 (30–65)	[c]
Social functioning	50 (38–75)	50 (38–75)	[c]
Physical role	0 (0–25)	0 (0–25)	[c]
Emotional role	33 (1–100)	67 (0–100)	[c]
Mental health	64 (52–80)	68 (55–80)	[c]
Vitality	45 (35–60)	40 (30–55)	[c]
Pain	33 (22–45)	33 (22–45)	[c]
General health	50 (35–65)	50 (35–65)	[c]
Health change	25 (0–50)	25 (25–50)	[c]

[a]Students' t-test. [b]Pearson χ^2. [c]Mann-Whitney U test. No p-value is presented when $p > 0.05$.
SD: standard deviation.

of the female non-responders was 43 years (SD 14 years). The ages of the male and female responders and non-responders did not differ significantly.

Table I shows the percentages of male and female patients who expected to achieve particular goals at the start of their treatment. All patients indicated at least one expectation. Four percent of the male respondents and 7% of the female respondents had added a further expectation to the given list of expectations. Because of the diversity of answers, these additional items were not taken into account in the analysis.

We found differences between male and female patients with CMP for 4 of the 25 possible expectations. The adjusted odds ratios are given in Table I insofar as they reached the significance level. Male patients were more likely than female respondents to expect the treatment to enable them to cope better with being a spouse and that the cause of the pain would be found. Female respondents were more likely to expect that the treatment would enable them to better accept the fact that they could no longer do what they were able to do in the past, and that they would have fewer problems with household activities. Only the difference in the expectation of "having fewer problems with household activities" reached the level of clinical importance.

There were no differences between the 5 years of data collection in terms of the percentages of expectations indicated by the patients.

DISCUSSION

This study examined differences in expectations about rehabilitation outcome between male and female patients with CMP who were referred for rehabilitation. For most of the 25 items on a list of expectations presented to the respondents, differences between male and female patients were not significant, but 4 differences were significant. The only difference with a clinically important OR was found for the item: "having fewer problems with household activities": women were more likely to expect this than men. Although roles in partnerships have been changing over the last few decades, it is still the women who are most involved in housekeeping, thus household activities are more important for women than for men. The finding that men are more likely to expect to be better able to cope with being a spouse may be explained by the fact that males become more focused on activities within the family after developing pain complaints. Facing the challenges of their changed role as a husband and coping with this new role may therefore be important to them. At this point, plausible explanations for the other differences are lacking: male respondents were more likely to expect that the cause of the pain would be found, and female respondents were more likely to expect that treatment would better enable them to accept the fact that they could no longer do what they were able to do in the past.

One might question whether these differences in expectations are of clinical importance. Since the literature offers no information on whether there is a relationship between types of expectation and treatment effect, the answer to this question is speculative. The results of our study support the relevance of further research into the possible relationship between a patient's expectations, fulfilment of these expectations and satisfaction with treatment, from the perspective of gender differences. Further studies will have to provide more knowledge about gender differences, so that effective treatment can be provided for both male and female patients.

As far as we know, no other studies have focused on gender differences in pre-treatment expectations.

Some limitations of our study must be mentioned. Only 27% of our patients were male. Research has shown that fewer men than women in the general population report musculoskeletal pain. For example, in the study by Picavet et al. (2) 61% of the women and 51% of the men in the general population reported musculoskeletal pain. This partly explains the gender differences in referral rates. However, our study had a higher percentage of female subjects with chronic pain than found in the general population by Picavet et al. (2). We therefore cannot rule out that selection bias may have influenced our results. In addition, the study was performed in the Netherlands, and cultural aspects probably influence expectations, so we have to be cautious about generalizing our findings to non-native Dutch residents and to other countries. Another limitation of this study was the low response rate. However, responders and non-responders did not differ in the characteristics known for both (gender and age). Therefore, we estimate the clinical relevance of this limitation to be small if any. The fourth limitation was that the reliability and validity of the questionnaire were not assessed, which warrants further investigation. The content of the questionnaire was based on the results of a consensus study about treatment goals in pain rehabilitation (21), which were in turn derived from a Delphi procedure, involving a large panel of professionals. Since treatment goals and expectations are presumably closely related, we assumed that the questionnaire contained the main expectations a patient may have. This assumption is supported by the fact that expectations that were not included in the list of expectations presented to the patients were diverse and also supported by the small percentage of respondents who suggested further expectations.

In conclusion, this study found no gender differences in pre-treatment expectations of rehabilitation for 21 out of a list of 25 possible expectations, small differences for 3 expectations and a strong, clinically important difference for 1 expectation. Male patients were more likely than female respondents to expect that the treatment would enable them to cope better with being a spouse and that the cause of the pain would be found. Female respondents were more likely than male respondents to expect that the treatment would better enable them to accept the fact that they could no longer do what they were able to do in the past and that they would have fewer problems with household activities. Only the latter expectation was a strong and clinically important difference.

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